



Scaling forest diversity across space and time in a non-equilibrial world

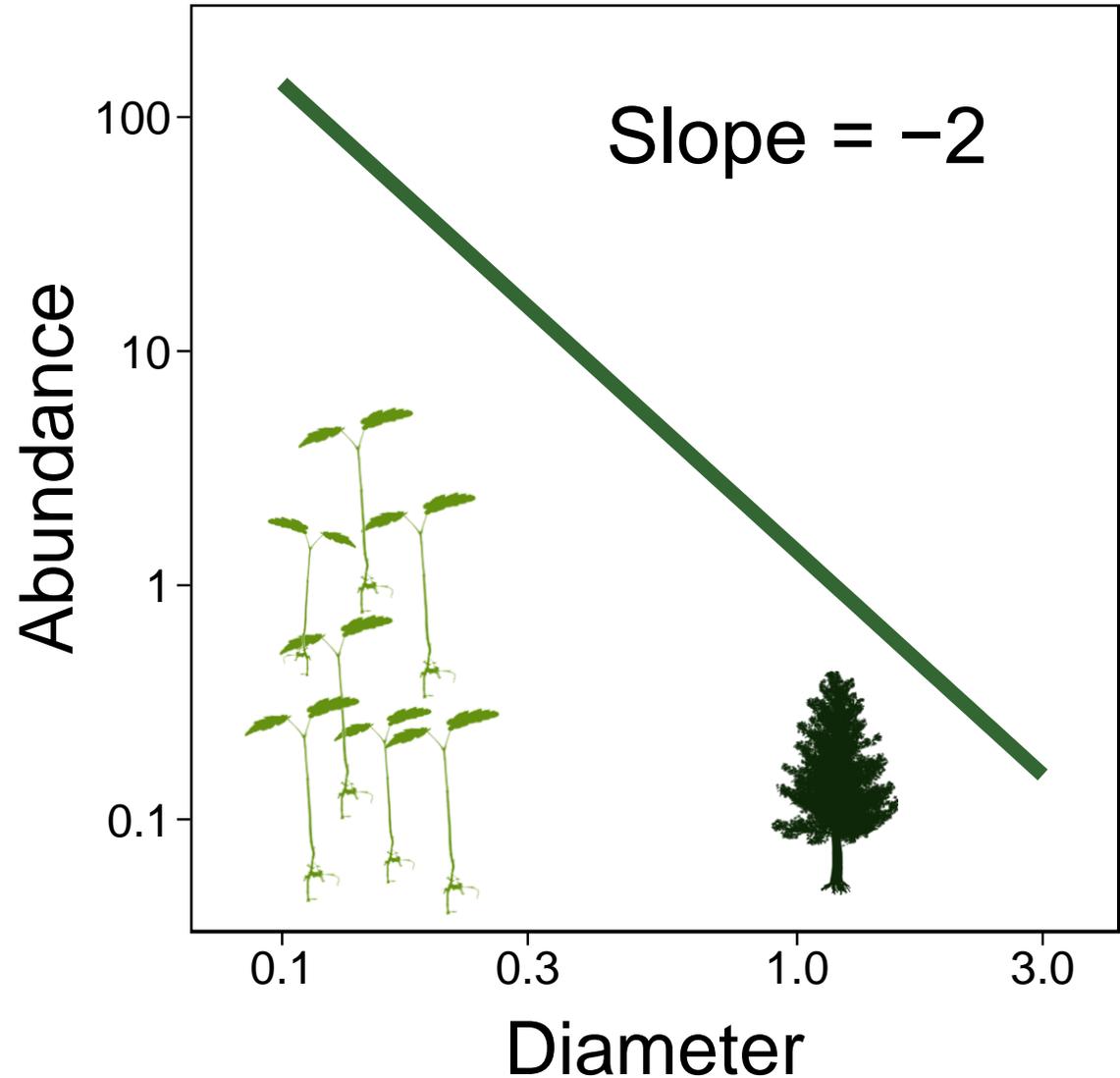
Dr. Sydne Record

University of Maine

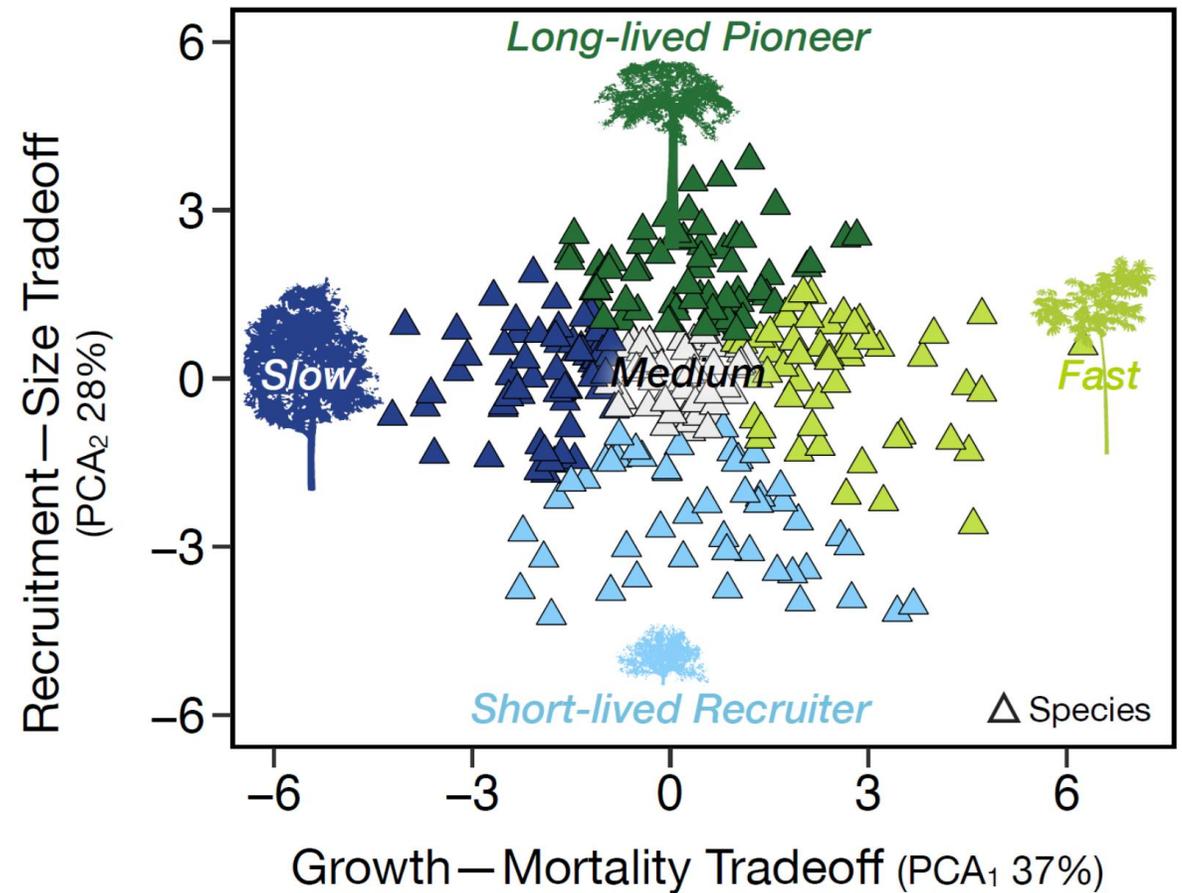
sydne.record@maine.edu



Scaling theory
provides general
rules about size &
abundance
relationships

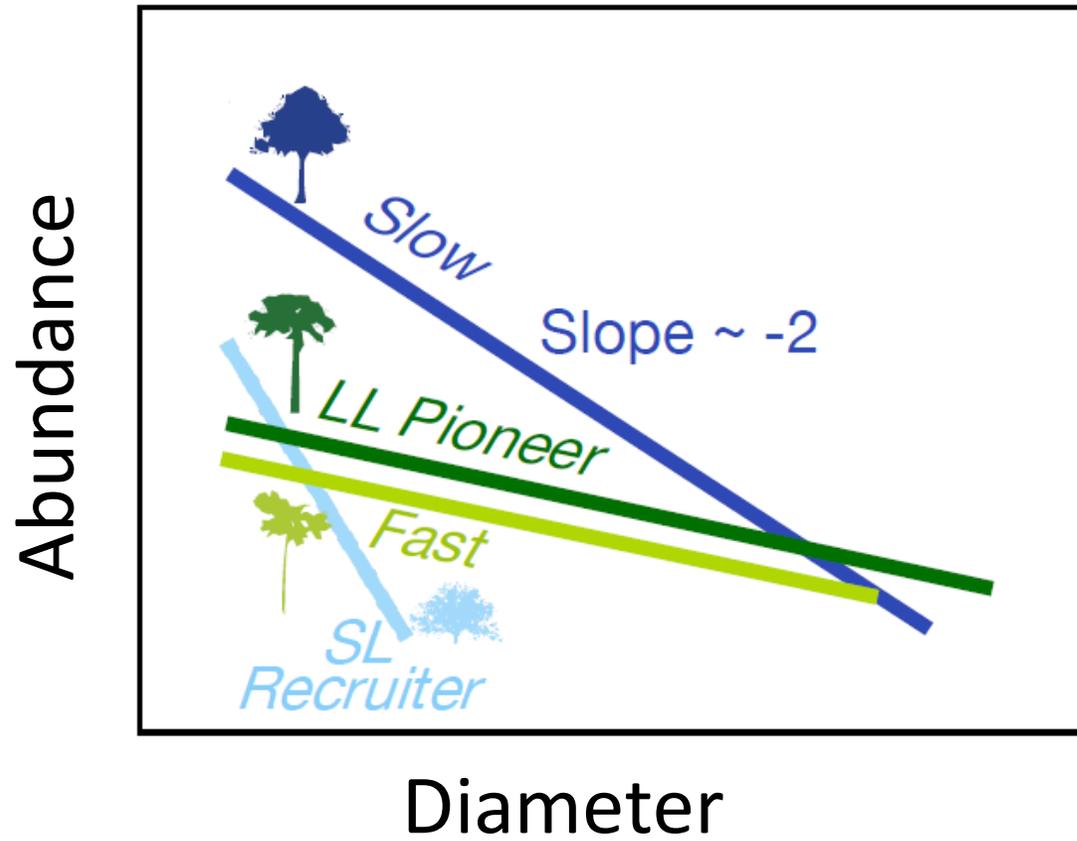


However, scaling theory ignores important variation across species



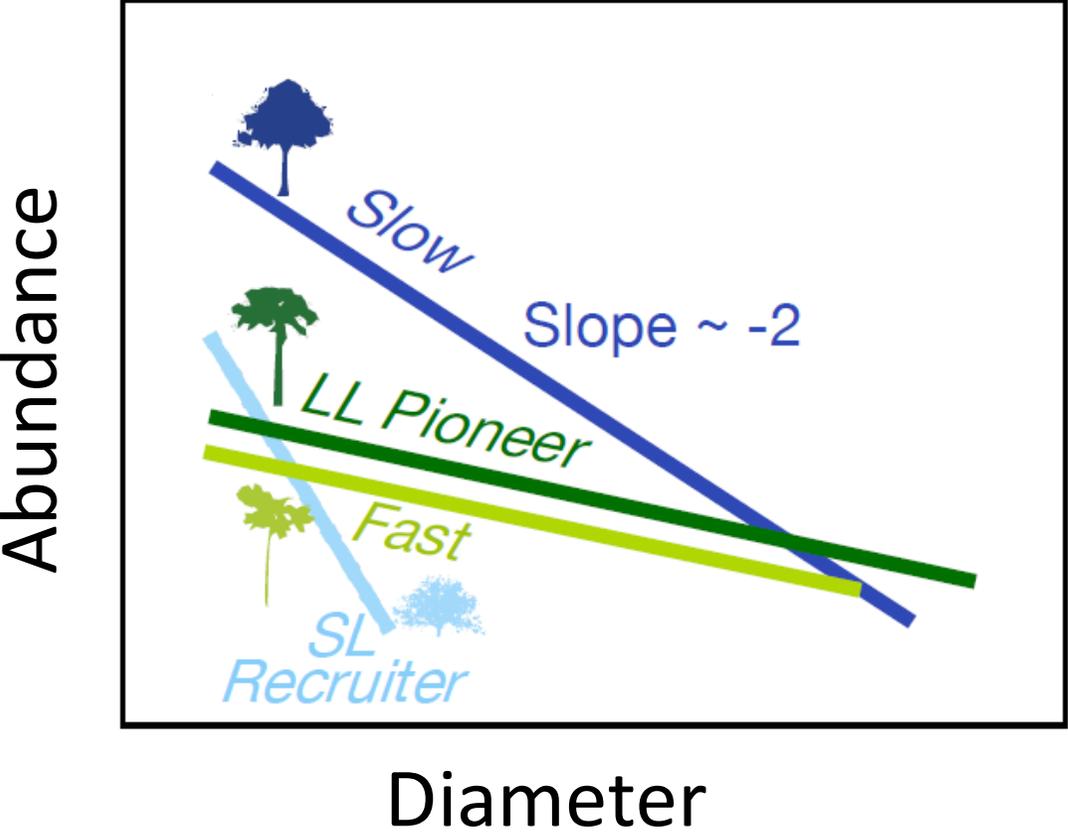
Scaling of life histories

Theoretical expectations

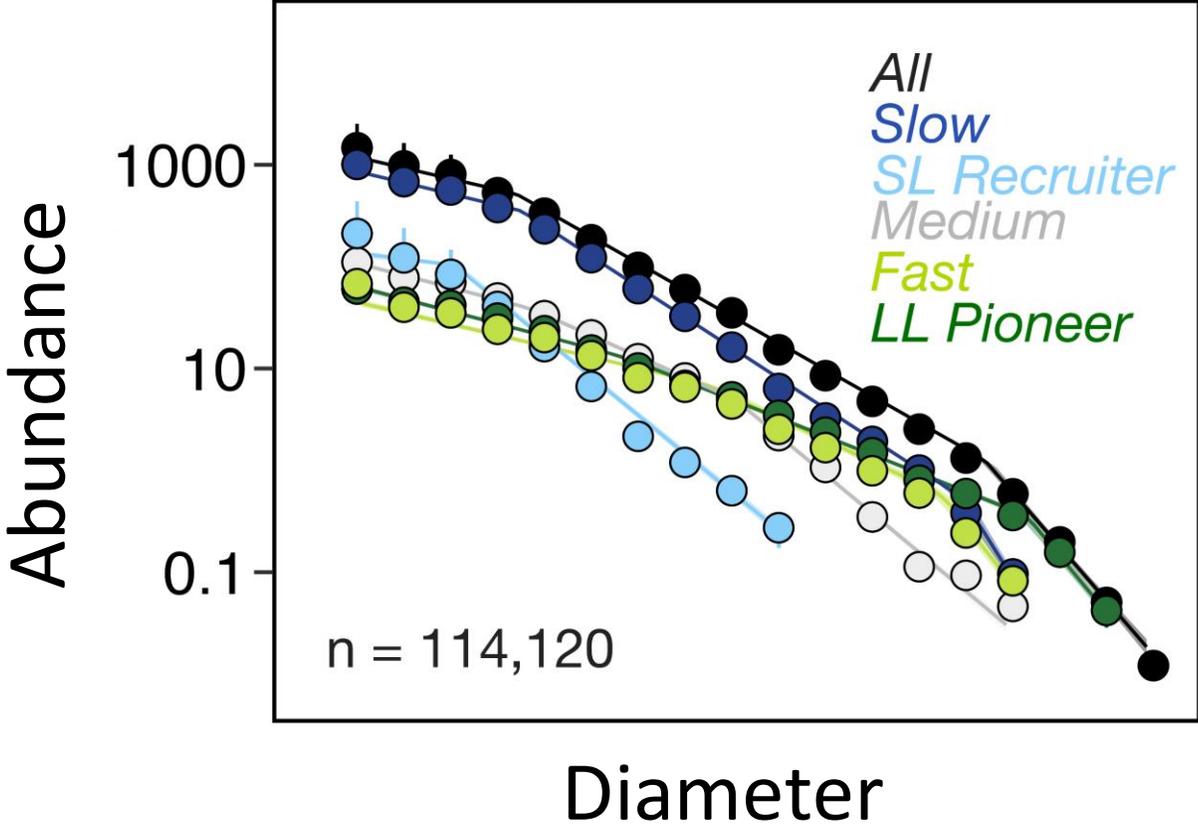


Scaling of life histories

Theoretical expectations



BCI Data

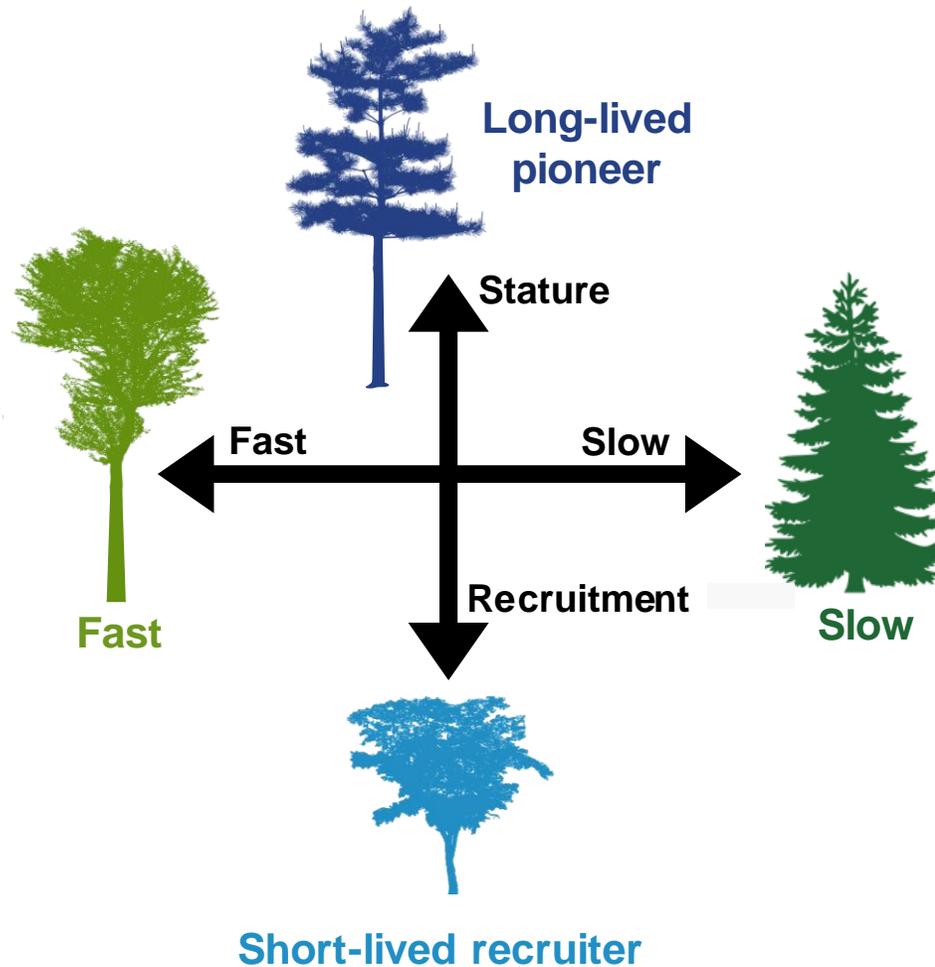


Life history axes of temperate forests



J. Marcos Rodriguez

Is there consistent variation of demographic traits in US temperate forests?



Trait Data

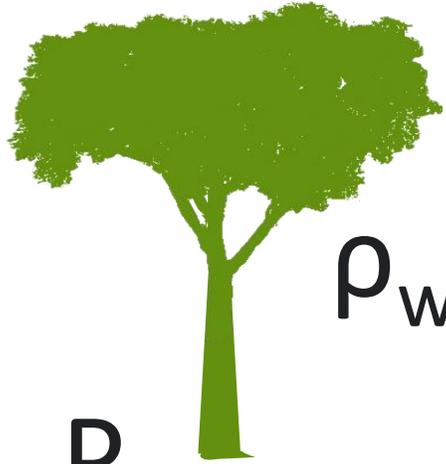


C
SLA



N

P



ρ_{wood}

m_{seed}



ForestGEO
GLOBAL EARTH OBSERVATORY NETWORK



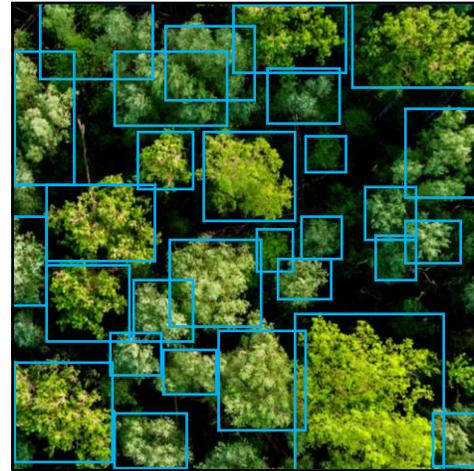
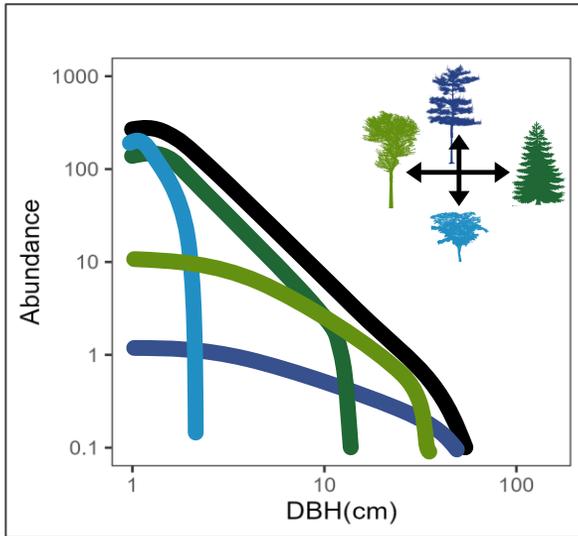
Forthcoming talk:
Ecological Society of America
Organized Oral Session
'Examining species interactions
with long-term tree plots'

Future directions



Becky Banbury Morgan

Predictions of
understory trees by
size and functional type



radius
RGB

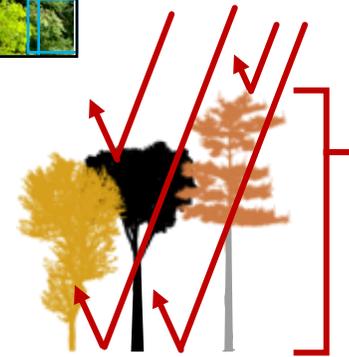
DBH
Estimates of
canopy trees

height

LiDAR

• NEON (~1m)

• GEDI (~30m)

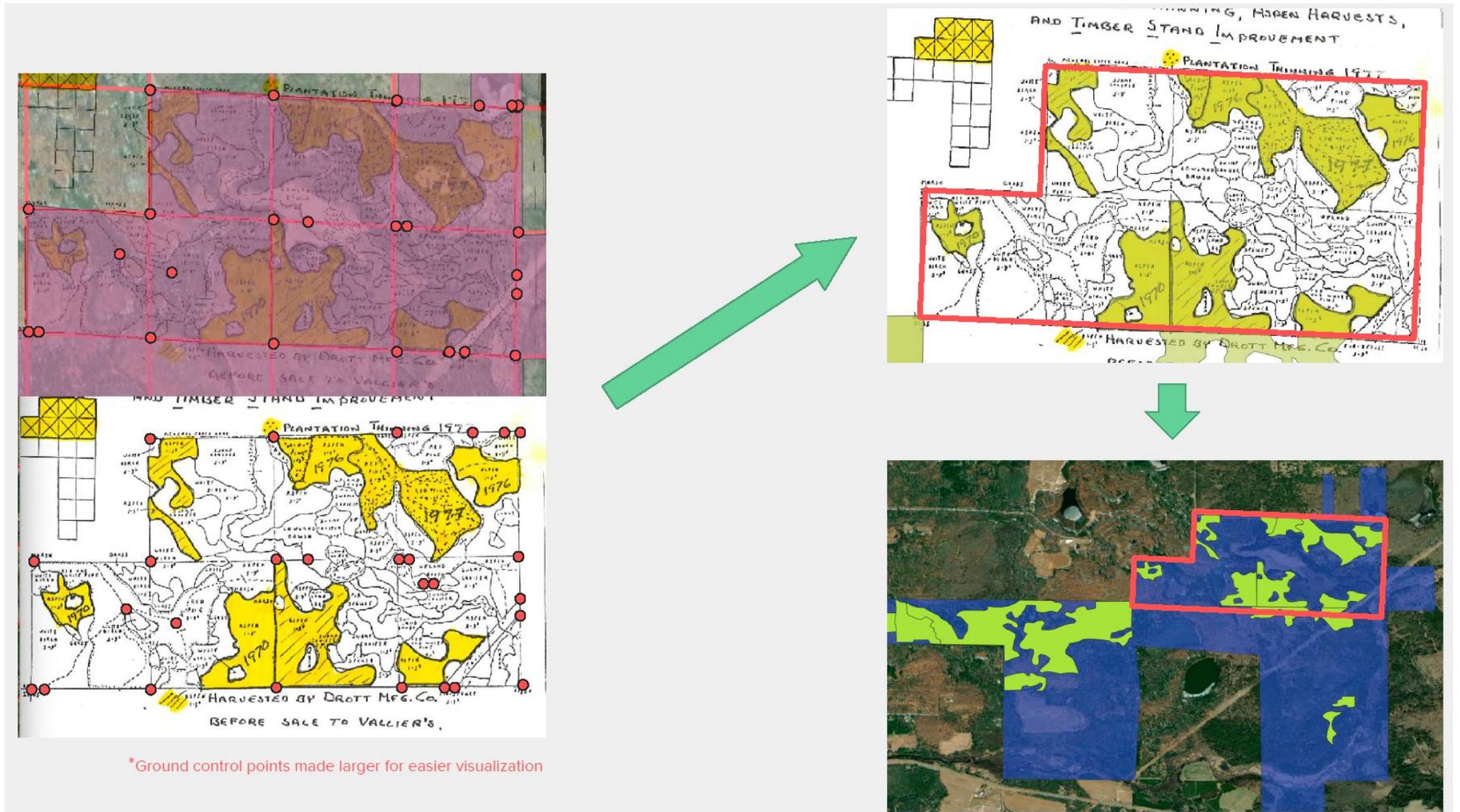


Acknowledgements

- NASA Grant: NNH20ZDA001N-BIODIV
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- ForestGEO site managers
- Harvard Forest
- National Ecological Observatory
Network



Types of data collected: TREE, WI (Potawatomi land)



Types of data collected: ORNL, TN (Cherokee land)

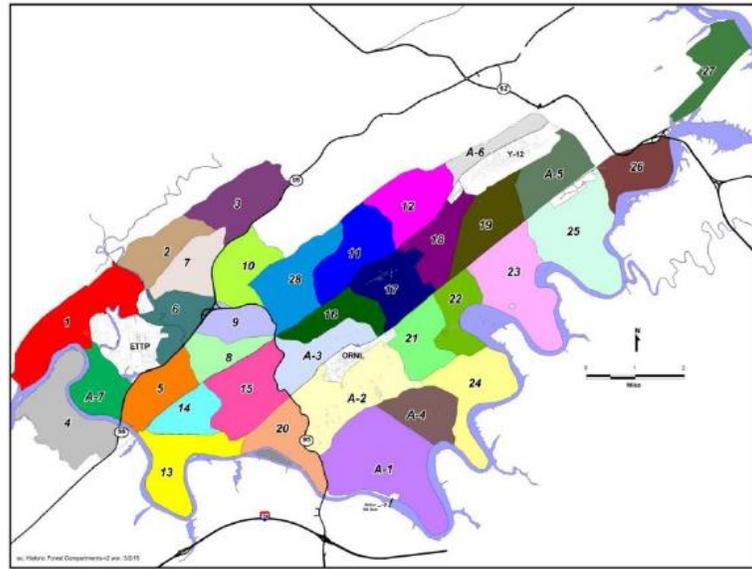
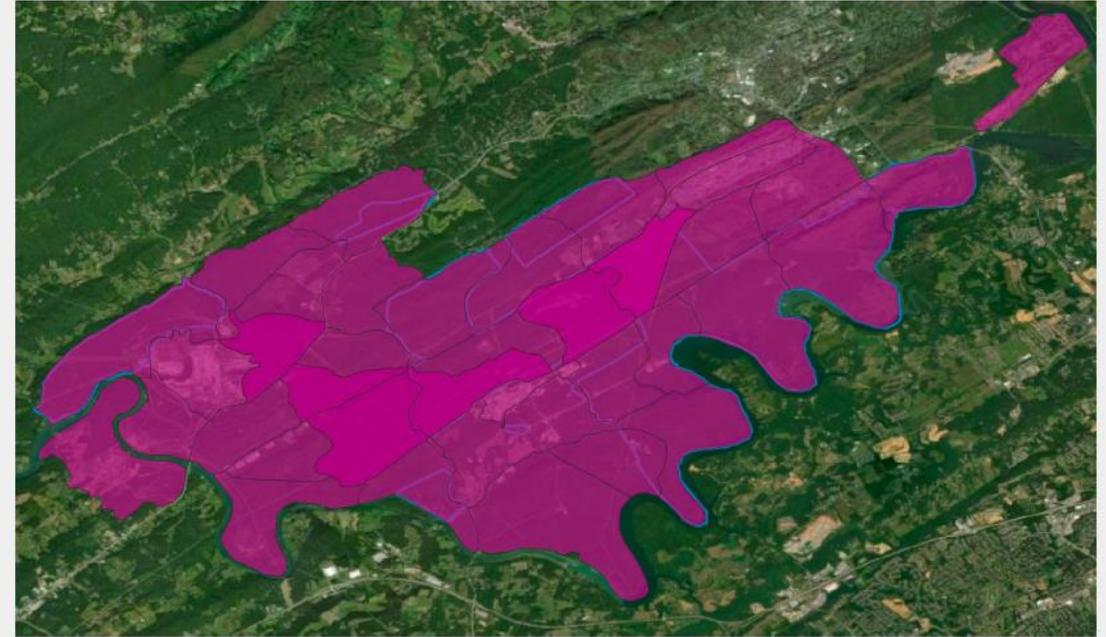


Fig. A.1. Forest management compartments.



Date	Location	Source	Acres	Responding units
4/2/1966	C-18, 0907 Area, power line fuse transformer failed, overheated, and dropped into fuels	Power line	100	ORNL FD, ETTP FD, Y-12 FD, COR, ORNL FM, Anderson Co. Rescue Squad, ORNL guards, AEC personnel and employees called in from the three ORR plants (100-150 people)
4/7/1966	Y-12 Burning Pits (and moved south of Bear Creek Rd.)	Escaped control burn	450	Y-12 FD, ORNL FM, ORNL P & E
2/21/77 to 2/23/77	C-8, Pine Ridge west of 500 kv P/L. Burned for 3 d prior to control; TVA clearing contractor	Escaped control burn	48.8	ORNL FM, COR
7/1981	Three small spots on Bethel Valley Rd., arson	Arson	0.1	ORNL FD, ORNL FM
1/28/1982	C-8, grass fire Bear Creek Rd. west of Hwy. 95	Smoker	0.1	ORNL FM
3/10/1982	Oak Ridge Tpk. 0.5 mile west of Westover Dr., cigarette	Smoker	1.5	COR



compartment	date	intensity	intensity_unit
18	1966	100	acres
Y-12	1966	450	acres
8	1977	48.8	acres
8	1982	0.1	acres
27	1987	0.2	acres
A-6	1988	6	acres
A-4	1993	0.1	acres
15	1995	12	acres
21	1995	0	acres